
What School Children Need to Learn About Injury Prevention

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Synopsis

Unintentional injuries are the leading cause of death and a major cause of morbidity among school age children. A survey of the educational

needs concerning injury prevention of a group of fifth and sixth grade children (ages 10-12) in Holliston, MA, revealed educational deficiencies, including bicycle safety, seatbelt use, firearms use, and water safety.

It is well known that the use of helmets can prevent bicycle injuries. Yet, not one of the children in this study reported using a bicycle helmet. Although most States have laws requiring seatbelts for young children, school age children are not covered by this legislation. The hazards of firearms have been well-documented. But it is clear that the children surveyed were in need of education about firearms; nearly half had used some form of firearms.

Individual counseling by pediatricians combined with school- and community-based programs can address injury prevention. It is anticipated that many pediatricians will begin using the questionnaire for school age children as that component of the American Academy of Pediatrics Injury Prevention Program is introduced.

UNINTENTIONAL INJURIES are the leading cause of death in children ages 5 to 14, with the majority of deaths caused by motor vehicle accidents followed by drowning, fires, firearms, and falls (1 and table 1). From the perspective of nonfatal injury, school age children are at considerable risk for both pedestrian- and bicycle-related hazards (2). The need to educate parents regarding injury prevention has been amply demonstrated for a variety of social, ethnic, and geographic groups of parents (3,4). Based on the available injury data for school children (1,2), we had reason to hypothesize that school children have important educational needs about injury prevention. It is the purpose of this report to describe the responses of school children to questions about injury prevention and to document their needs for education regarding this important health issue.

Methodology

The Framingham Safety Surveys are a series of developmentally oriented surveys that have been

used in a variety of geographic settings (3) for counseling parents of varying socioeconomic and cultural backgrounds (4). The preschool surveys are currently a part of the American Academy of Pediatrics' The Injury Prevention Program (TIPP) (5). The surveys offer a practical means to integrate accident prevention counseling into pediatric office practices (6).

To extend injury counseling to older children, a survey was designed for school children ages 10 to 12. It is intended to be completed by the children at the time of a routine health maintenance visit and thereby actively involve the children in the counseling process. The survey consists of seven multiple choice questions. It was decided to keep the number of questions limited in order to maintain a reasonable format for the child and to focus on those issues that represent significant causes of mortality, such as motor vehicle accidents, drownings, and fires (1), as well as important causes of morbidity, such as pedestrian and bicycle injuries (3). The reading level of the survey questions is

Table 1. Injury deaths of children ages 5 to 14 years, United States, 1983

Type of accident	Number of deaths	Death rate ¹
Motor vehicle	2,241	6.6
Drowning	711	2.1
Fire, burns.....	422	1.2
Firearm	203	.6
Falls	70	.2
All accidents.....	4,321	12.7

¹ Deaths per 100,000 children 5-14 years.

SOURCE: Accident Facts, National Safety Council, Chicago 1986.

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third grade as determined by Fry's Readability Graph (7).

The surveys were administered to 106 children in grades five and six in the town of Holliston, MA, a suburb of 13,000 residents in the Boston metropolitan area. These grade levels were chosen because they correspond to the target age level (10-12). The purpose of this effort was to field test the surveys before introducing them in pediatric practice settings and to document the educational needs of the children studied. The process was supervised by a registered nurse with considerable experience in counseling to prevent children's injuries. Answers to questions which are considered "at risk" were tabulated by age in two groups: 10-11 years and 12 years. An "at risk" response is defined as an answer that indicates the need for counseling. Differential response patterns of these groups were tested for statistical significance by means of the Fisher's exact test of the raw data.

Results

A total of 106 children completed the survey; 71 were between the ages of 10 and 11, and 28 were age 12. Seven 13-year-old respondents were not

included, giving a final sample size of 99. The average number of "at risk" responses was 2.5. Responses of children to specific questions are summarized in table 2.

Children demonstrated educational strengths on two questions. Almost every child stated that there was a smoke or fire detector at home. All but one child demonstrated knowledge of the correct rules for crossing the street. The educational weaknesses were quite apparent. Not a single child in the group used a bicycle helmet, and many (28.3 percent) rode with a passenger on the bike. More than half did not use automobile seatbelts. In addition, almost half (48.4 percent) of the children used some form of firearm. On the issue of lack of supervision near bodies of water, the 12-year-olds responded significantly more frequently with at risk answers ($P < .001$).

Discussion

It is clear from these results that educational needs for injury prevention do exist for those school children who participated in the study. Bicycle fatalities account for 4 percent of car-related deaths in children, and non-fatal bicycle injuries are far more common than fatal injuries. In a Massachusetts study, 2 of every 100 boys age 6 to 12 years were treated for bicycle injuries each year. The highest incidence of bicycle injury occurs in children ages 10 to 14 (5). Many factors contribute to bicycle injury patterns. Riding with passengers on the bike is a significant factor in about one injury out of every six (8). Although it is well known that the use of helmets can help to prevent bicycle injuries (9), studies have shown that elementary school children are unlikely to use bicycle helmets (10).

These observations are confirmed clearly in this survey in which not a single child reported using a bicycle helmet and nearly one-third stated that they rode with passengers on their bike. It has been suggested that reasons for nonuse of helmets other than cost might include lack of awareness of benefits and possible negative peer pressure (10). To encourage bicycle helmet use a variety of modalities must be used, including school- and community-based public education programs. The value of peer-led school based programs, which have shown to be effective in discouraging smoking (11), might be used as a model to promote bicycle helmet use. In addition, physician counseling can help to reinforce school-based educational programs.

Table 2. Responses of 99 Holliston school children to Framingham Safety Survey, 1988

Survey question	At risk answer	Responders at risk						P value ¹
		10-11-year-olds		12-year-olds		Total		
		Number	Percent	Number	Percent	Number	Percent	
1. Do you ever use guns (cap guns, BB guns, real guns)?	Yes	35	49.3	13	46.4	48	48.4	² NS
2. Do you have smoke or fire detectors in your home?	No, don't know	2	2.8	1	3.6	3	3	NS
3. Do you ever ride with passengers on your bike?	Yes	18	25.4	10	35.7	28	28.3	NS
4. Do you wear a helmet when you ride your bike?	No	71	100	28	100	99	100	NS
5. Do you wear seatbelts in the car?	Sometimes, never	35	49.3	18	64.3	53	53.5	NS
6. When you want to cross the street, what is the first thing you should always do?	Step into the street	1	1.4	0	0	1	1	NS
7. When playing near water (for example, rivers, ponds, lakes, oceans)?	It's OK to play alone	1	1.4	11	39.3	12	12.1	.001

¹ P value computed by Fisher's exact test of raw data.

² NS = not significant ($P \geq .05$).

Auto occupant injuries are the leading cause of death for children ages 5 to 14 (2). Seatbelt restraints are currently the most widely available mechanism to reduce both morbidity and mortality in an automobile crash (12). Although most States have laws requiring auto restraints for young children, school age children are not covered by this legislation. In the present study, 47.5 percent reported using seatbelts "sometimes," and 6.1 percent stated they "never" use seatbelts. This response places more than half of the children in this study at risk for automobile occupant injuries.

The hazards of firearms, both toy and real, have been well documented (13,14). This particular study did not differentiate between the various types of guns because its intention was to devise a practical counseling tool rather than to obtain specific information about each type of firearm use. It is quite clear, however, that as a general topic this is an area where the children surveyed need education. It is important to remember that, in addition to deaths due to genuine firearms, both deaths and serious injury (13), including significant ocular injury (15), have been attributed to BB guns and air rifles. Cap guns have been associated with sensorineural hearing loss (16).

Drowning is a significant cause of death among school age children (table 1). This survey focused on supervision because this factor is considered of major significance in preventing death due to drowning (5). The ability to swim does not necessarily protect an unsupervised child from drowning.

At least one study from Australia documented that for those persons over age 5 who drown, 39 percent were classified as average swimmers and 22 percent were classified as excellent swimmers (17). It is important to emphasize that in the panic of a drowning situation, swimming skills may be lost. It was of particular note in this survey that older children were more likely to swim unsupervised than younger children ($P > .001$). Presumably, this relates to a greater sense of confidence in swimming abilities in this age group.

In summary, there are a number of distinct areas of injury prevention for which school age children in this study have demonstrated educational deficiencies. An educational approach involving physicians, schools, and community resources can begin to address this problem. It is anticipated that many pediatricians in practice will begin using the school age questionnaire as this component of the American Academy of Pediatrics TIPP program is introduced. The health maintenance visit is well suited for this type of individualized counseling. To have maximum benefit, however, it is hoped that school health education programs will also emphasize this important health problem.

A standardized school curriculum which includes a didactic approach to injury prevention is available from the American School Health Association (18). School programs offer not only the possibility of using creative audiovisual materials, but they also provide the opportunity for group interactions. Coordination of school efforts with those of pro-

professional organizations, such as the American Academy of Pediatrics, can serve to enhance the effectiveness of safety education for children. In addition, greater awareness of the educational needs of school children can help to focus community efforts on appropriate issues for public education campaigns. An approach to injury prevention that uses multiple opportunities for education, including the pediatric visit, schools, and the media is the most effective educational strategy to pursue (19).

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AIDS Knowledge and Attitudes Among Adults in Vermont

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Synopsis.....

To design a statewide educational campaign, the Vermont Department of Health attempted to mea-

sure knowledge about AIDS among residents of the State. During the period November 1986 through January 1987, the authors conducted a telephone survey of noninstitutionalized residents ages 18 and over.

The results were examined in relation to age and education. The most accurate answers were given by respondents less than 45 years. In terms of educational attainment, respondents with less than a high school education had an average score of 61.4 and those with a college degree averaged 85.0. When the authors examined responses to individual questions, it became apparent that respondents were more knowledgeable about ways the virus could be transmitted than about ways it could not.

A more comprehensive education program must reduce fear. One component of the current AIDS campaign in Vermont is an advertisement that addresses unfounded concern about casual transmission of AIDS.